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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/987,345	11/14/2001	Takeshi Konno	107443-00014	6928

32294 7590 11/26/2003

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EXAMINER

FONTAINE, MONICA A

ART UNIT	PAPER NUMBER
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1732

DATE MAILED: 11/26/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/987,345

Applicant(s)

KONNO, TAKESHI

Examiner

Monica A Fontaine

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 September 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 November 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

The following action is in response to the Amendment filed 10 September 2003.

Claim Rejections - 35 USC § 102

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claim 9 is rejected under 35 U.S.C. 102(e) as being anticipated by Imatomi et al. (U.S. Patent 6,321,940), hereafter "Imatomi," as set forth in Paper No. 5.

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shimizu et al. (U.S. Patent 4,879,077), hereafter "Shimizu," in view of Yamazaki (U.S. Patent 4,540,359), as set forth in Paper No. 7.

Claims 13-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shimizu, in view of Yamazaki.

Regarding Claim 13, Shimizu shows the basic process as claimed, including controlling an injection molding machine including a heating cylinder and a screw disposed in the heating cylinder (Column 3, lines 46-47), moving molten resin in a forward feeding direction during a plasticization/measuring process and an injection process (Column 2, line 60), and rotating the

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screw in the feeding direction at a rotation speed R (Column 2, lines 45-49) and simultaneously and linearly moving the screw at a speed V (Column 2, lines 48-51). Shimizu does not show moving the screw backwards while rotating it after completion of the measuring process or the injection process. Yamazaki shows that it is known to retract the screw while rotating it (Column 6, lines 29-33). It would have been obvious to one of ordinary skill in the art at the time the invention was made to move the screw backwards after an injection process, as in Yamazaki, in Shimizu's molding process in order to melt and measure the material more efficiently.

Regarding Claim 14, Shimizu shows the process as claimed as discussed in the rejection of Claim 13 above, including a method including controlling rotation speed R in correspondence to position detecting means (Note that by detecting position, speed V of the screw would be indicated. Column 5, lines 43-55). Shimizu does not show moving the screw backwards while rotating it after completion of the measuring process or the injection process. Yamazaki shows that it is known to retract the screw while rotating it (Column 6, lines 29-33). It would have been obvious to one of ordinary skill in the art at the time the invention was made to move the screw backwards after an injection process, as in Yamazaki, in Shimizu's molding process in order to melt and measure the material more efficiently.

Regarding Claim 15, Shimizu shows the process as claimed as discussed in the rejection of Claim 13 above, including a plasticization/measuring process and an injection process (Column 2, line 60), wherein the rotation speed R of the screw is given, by defining a synchronization ratio based on the backward speed of the screw and the pitch of the flight of the screw (Column 2, lines 44-57). The examiner notes that a specific "synchronization ratio" is not

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explicitly defined in Shimizu, however, it would have been obvious to one of ordinary skill in the art at the time the invention was made to assign a value of 100% when the screw rotation and linear movement are perfectly synchronized.

Regarding Claim 16, Shimizu shows the process as claimed as discussed in the rejection of Claims 13 and 15 above, including a method wherein the selected rotation speed is given by dividing the backward speed of the screw by the pitch of the flight of the screw (Column 2, lines 44-57). The examiner notes that a specific "synchronization ratio" is not explicitly defined in Shimizu, however, it would have been obvious to one of ordinary skill in the art at the time the invention was made to assign a value of 100% when the screw rotation and linear movement are perfectly synchronized. The examiner also notes that Shimizu does not explicitly define an arbitrary synchronization ratio, as used in the claimed formula. However, since the arbitrary synchronization ratio cannot alter how the process steps are to be performed to achieve the utility of the invention, it is herein addressed as nonfunctional descriptive material (MPEP 2106 VI).

Regarding Claim 17, Shimizu shows the process as claimed as discussed in the rejection of Claims 13 and 15 above, however Shimizu does not explicitly show variations of the synchronization of the screw rotation and linear movement. However, it would have been obvious to one of ordinary skill in the art at the time the invention was made to realize that if a synchronization ratio is less than 100%, the screw is rotated more slowly than the backward speed of the screw (thus dragging resin backward) and that if the synchronization ratio is more than 100%, the screw is rotated faster than the backward speed of the screw (thus feeding resin forward). It would have been obvious to one of ordinary skill in the art at the time the invention was made to vary Shimizu's synchronization ratio of the screw's rotation speed and linear speed

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during his molding process in order to achieve better measuring and melting of the material therein. Furthermore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to assign a value of 100% when the screw rotation and linear movement are perfectly synchronized (causing no movement to the resin).

Response to Arguments

Applicant's arguments filed 10 September 2003 regarding the 35 USC 102(e) rejection of Claim 9 have been fully considered but they are not persuasive. Applicants contend that the Imatomi document does not teach the instant invention because he does not teach forcibly moving the screw backwards by driving a servomotor. This is not persuasive because the instant claim does not require forcibly moving the screw backwards by driving a servomotor. The "linearly moving" step merely requires causing the screw to move backwards linearly which Imatomi clearly teaches (Column 6, lines 20-30). Applicants contend that the Imatomi document does not teach the instant invention because he does not teach a constant retraction speed. This is not persuasive because the instant claim does not require a backwards linear motion of constant speed. Applicants contend that the Imatomi document does not teach the instant invention because the retraction operation is a suck-back operation which is known in the art to be carried out without rotation of the screw. This is not persuasive because the specific citation which applicants have cited is a retraction operation different than the one upon which the examiner has relied for the rejection. Applicants' citation refers to a suck-back operation immediately following injection of material into a mold, whereas the examiner's citation legitimately refers to a screw retraction and simultaneous rotation following plasticization of

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material. It is noted again (this note is also found in Paper No. 7) that due to the claim language, it is possible to reject the claim with prior art having screw retraction with rotation after a plasticization process OR an injection process.

Applicant's arguments filed 10 September 2003 regarding the 35 USC 103(a) rejection of Claims 1-12 have been fully considered but they are not persuasive. Applicants contend that the Shimizu document does not teach the instant invention because he does not teach calculating a rotation speed as recited in Claims 1, 3, 5, and 7 of the instant application. This is not persuasive because Shimizu clearly teaches a formula for finding rotation speed R by dividing linear speed of a screw by pitch of a screw (Column 2, lines 48-51; Column 5, lines 5-20), essentially how applicant arrives at rotation speed R. Although Shimizu does not use backward linear speed in his equation as applicant does, Shimizu's teaching of dividing linear speed (Shimizu's and applicant's linear speeds are both measured in mm/sec) by pitch (Shimizu's and applicant's pitch values are both measured in mm) suggests that any linear speed, backward or forward, could be used to determine the rotation speed. As noted in Paper No. 7, the examiner notes that a specific "synchronization ratio" is not explicitly defined in Shimizu, however, it would have been obvious to one of ordinary skill in the art at the time the invention was made to assign a value of 100% when the screw rotation and linear movement are perfectly synchronized. The examiner also notes that Shimizu does not explicitly define an arbitrary synchronization ratio, as used in the claimed formula. However, since the arbitrary synchronization ratio cannot alter how the process steps are to be performed to achieve the utility of the invention, it is herein addressed as nonfunctional descriptive material (MPEP 2106 VI.). Applicants contend that the Shimizu document does not teach the instant invention because he does not disclose backward movement

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of the rotating screw. This is not persuasive because this limitation was not indicated as being met by Shimizu; Yamazaki was introduced and combined with Shimizu to meet this limitation. Applicants contend that the Yamazaki document does not teach the instant invention because he does not teach forcibly moving the screw. This is not persuasive because the instant claim does not require forcibly moving the screw backwards by driving a servomotor. The “linearly moving” step merely requires causing the screw to move backwards linearly which Yamazaki clearly teaches (Column 6, lines 27-33).

In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, the Shimizu document suggests that it would be possible to move the screw backward if its driving motor was reversely rotated (Column 4, lines 18-27), thus providing the motivation for permissible combination with the explicit teaching of backward movement with simultaneous rotation in Yamazaki.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

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A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Monica A Fontaine whose telephone number is 703-305-7239. The examiner can normally be reached on Monday-Friday 8:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mike Colaianni can be reached on 703-305-5493. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9310.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

Maf

Maf
November 21, 2003

*new phone number
after 12/22/03
571-272-1198*

Michael Colaianni

**MICHAEL COLAIANNI
PRIMARY EXAMINER**